

## Using Humanistic AI to Augment Collaboration and Performance

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BRADLEY HOWARD (BH): Hello everyone. I'm Bradley Howard and I'm happy to welcome you back to a new episode of Tech Reimagined. We're now in Season Two, where we aim to explore the big questions facing us all in everyday life and the changes we see, especially in technology. Today, I'm thrilled to sit down with a very exciting guest, a name that's impacted our lives in a way that will echo for many generations. Tom Gruber is a designer, entrepreneur and AI thought leader who uses technology to augment human intelligence. He was co-founder, CTO and Head of Design for Siri, Apple's voice controlled personal assistant. Siri was launched as an iPhone app in 2010 and soon afterwards became part of Apple. Tom, welcome to the Tech Reimagined podcast. It's great to have you here with us today.

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TOM GRUBER, PRODUCT DESIGNER, ENTREPRENEUR (TG): Great, thanks for having me, Bradley, this is great.

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BH: Well, we're super excited. Many of us have watched your TED talk around humanistic AI, which is the topic that we really want to explore a bit more in today's episode. So to kick things off, what is humanistic AI? What's the connection with what we refer to today as an intelligent assistant?

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TG: Okay, thanks. Humanistic AI is really a point of view on how and why to do AI, to build the AI systems, to do research. It basically starts from here. You can do work in engineering and science just for its own sake because it's cool. So you can make, you know, bigger, better, stronger bridges or whatever, because it's cool or you can build the thing for a purpose. So humanistic AI is basically a purpose for doing AI. And it turns out that if you start from that, you get different results. So by definition really, humanistic is AI, whose design intent, which is designed for the purpose of helping humans, making human benefit, as opposed to, say, machine benefit or corporate benefit or other kinds of benefits. And generally that means that the AI is aligned with humans in a sense of either being a collaborator instead of a competitor, or it's augmenting the human, like adding capabilities to the human instead of automating them out of the picture. And you can see already the language I'm using, the kind of pictures, the kind of them and us kind of thing. If you imagine, for instance, celebrating that AI finally beat humans at the hardest game they ever invented, say, Go or whatever, and called that a scientific achievement.

You're not doing humanistic AI, you're doing machine intelligence for its own sake. If you however said that AI is now solving a diagnostic problem for medicine, you're doing AI because it's helping people be smarter as people, as doctors, as practitioners. And you ask about the tie in to virtual assistant. That's an interesting question. It turns out that the Siri founders were deeply interested in human centric AI. In fact, we actually asked all of our employees to read a book by MIT professor and chair of the computer science department, Michael Dertouzos, which was basically what he said was that AI was essentially there to have humanistic or humancentric computing. It was - and that is that the AI should be augmenting us and collaborating with us. So when we conceived of Siri, we thought of AI as in service of helping people get things done as an assistant, rather than a kind of a peer in some competitive environment. So, for instance, on social media or online or something, where the AI is pretending to be a human and trying to trick people.

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BH: Right. On that subject, by the way, something that I've always wondered, why do all voice assistants start off with a female voice?

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TG: I well, first of all, I'm happy to disabuse you of that opinion. It turns out they don't and they haven't. You know, the ones that had voices, I would say Siri is one of the first mainstream ones, maybe the first one that really hit the big time. And when it launched by Apple in 2011, there were three countries that it was launched in: the United States, United Kingdom and France. And in two of the three, the voice was male. It just turned out that most of the journalism was written in the United States, in the Western, U.S. centric press. And so they kept thinking, it's a woman. And of course, it's easier to make fun of it and do all these things. Now, it's important to realize that this is a design choice: the name, the persona, the gender address, how you address gender, are all design points, and the Siri team actually deliberately tried hard to not be gendered. So, for instance, our back story and our brief on all of our writers is Siri is not a gendered agent. It has no gender. In fact, it isn't even it isn't even a resident of the planet Earth. It is meant to be outside of the human, sort of biological, gendered experience. Now it has to use language. So when people say. When people say something to it, says, "Well, will you sleep with me?" or something it has to respond, but it always responds in a non-gendered way.

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BH: So had you considered giving it a completely synthetic voice so that it wouldn't sound either female or male to what we understand it?

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TG: You could, actually, but that won't appeal as well. People wanted a human voice and humans do come in, voices that can be read as gendered, and also, as you know, within a couple of years, Siri gave everyone the choice. Within two years, as soon as it was technically possible, we actually commissioned there to be a pair of voices for every language. And that has been the policy ever since. And I think some of the other assistants are making that direction, moving in that direction, too. Now, there are some, you know, designers who create some agents that they deliberately make it female for a reason. But that's their design choice. And they're trying to make a statement like the Chalise, for instance, in China, the Microsoft/Siri type thing. It is clearly a female pop star. It is meant to be a female pop star. It's not meant to be a non-gender Asian.

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BH: You learn something new every single day, don't you? That's amazing. So back to humanistic AI. What do you think are going to be the industries that are going to benefit the most from humanistic AI?

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TG: Well, those industries who are aligned with human benefit and a lot of industries are. I mean, so extracting fossil fuels for profit, not one of them, but a lot of things like health care and home care, any place in which we could use some more augmented intelligence, or some more collaborators in the cognitive area help. So, I mean, I'm involved a lot with health care these days because it's really is the thing now where AI is making lots of progress. But there are also things, and surprisingly places like mental health care, where AI is giving us new kind of superpowers to see ourselves. AI can now make sense of signals like the motions you make on your interface, to see deeply into your brain circuits, to see how well you're doing, and to predict disruptions in cognitive and mental health. It's also being used to predict migraines and a bunch of things that humans simply can't do. But now, with these new abilities to make sense of high dimensional

sensor data, we can now start to have A.I. as a partner to give us essentially a mirror on ourselves so we can take better care of ourselves.

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BH: Can you see a near future where lonely people for whatever reason, are using a Siri type assistant to keep themselves more sociable, etc.?

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TG: That's a good question, Bradley. Can we - should we build and can we build AI systems which, whose primary role is a relationship partner or some kind of a social being? I think we can and we should, but we should do it with our ethics hats on and be careful what we do. You can - there's already good AI based systems out there to help people learn empathy. For instance, autistic kids who have some neurological limitations in that space are now being able to get feedback about how their eye gazes and their intentions are essentially doing and train up on more empathetic community behaviour. I'm working with a company that's trying to reverse the nonsense in violent video games, by, former game designers are now doing a game which has an AI character. And the purpose of an AI character is to be a nurturing partner to help the user, the participant learns self-care and prosocial behaviours. So these things absolutely can be done. And some of the same psychology work that's involved in getting AI to trick people, say, or do nefarious things can be used to help people learn to be more effective as individuals and as social beings.

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BH: And what do you think the risks are about using AI to replace humans in certain areas, like some of the examples you just gave about treating kids?

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TG: Well, those examples I used are not replacing people. What they're doing is being there when the people aren't there. So let's just give a few examples. One is, say, mental health care. Well, there are not enough mental health care providers, certainly not enough trained psychiatrists and those kind of folks, but even social workers and all that. There's just not enough, there's vastly more mental health conditions than there are providers. And secondly, even when you have them, let's say you're a billionaire and you can hire psychologists whenever you want. You don't see them eight hours a day every day. However, the AI can be with you all the time. So that's the role of agent like or human like AIs, is to be there when the professional or the dedicated person couldn't be there. There's even ideas that, you know, when kids learn to want to learn to read, having an AI assistant help them read doesn't replace the human teacher or the parent. It's just their parents wish they could be there helping the child to read all day long, but they can't. So this is the role. It's also true in things like white collar work. There have been all these fancy consultants' reports saying what percentage of white collar work will be replaced with AI over so many years, and that there will be a lot of work since there's amount of work over time that people do when they're in jobs, and a lot of the current work people do will be able to be done by AI because a lot of the work people do now is mundane. It doesn't require creativity or innovation or a sophisticated goal setting and so on. And so it's going to be like perceptual work. And so that will be automated. But those people's jobs probably will just transmorph, rather than be replaced in those situations.

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BH: You talk about automating some people's roles. How can companies spot those, almost opportunities for automation versus AI?

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TG: Well, right. So if you think of the automation as replacing a job that you hire someone for today, that's not humanistic AI and that's actually competing with humans. You can do that and you can do it for the goal of saving money. Generally, you get inferior results. Today, for example, what we see now, a lot of call centers are automating as much as they can, because human contact is expensive and what we end up getting is lower quality, not more service, when we do that. Although it is true that unfortunately a ton of the calls to call centers are for really stupid things that can be solved by an AI. The goal here, the company should be able to see, "Oh, my goal, if my only goal is saving money, I'm going to be going down a path in which it may not be serving my stakeholders", in this case, the customers, "If I'm going down the path that AI is now, can help people that I do employ do better jobs, can change the nature of their work. So what they're doing is more deserving of an intellect and not just drudge work."

And if they can think of that as that kind of augmentation of the workforce rather than a replacement, you end up with a highly leveraged workforce that can do a lot more, a lot more productive. Now, let me give you an example. People thought of – talk about this conversation, obviously a lot, economists and philosophers and so on. And there's a really good edge case, is the problem of driving. So driving is the thing we all do today, and this is something that Uber drivers and Lyft drivers do, is something that taxi drivers do, truck drivers. So it does create a lot of employment. However, it's dangerous. It's very stressful on the people. It's not a pleasant job. It's, they're doing the job because there was no other way to do it. Now, if truck driving Uber driving were automated, those jobs would be eliminated. However, is it the case that the collective benefit of having fewer accidents, fewer health care issues, all this distress and destruction, that, and less traffic, for instance, if all these things would happen as a consequence of, the collective benefit would happen, as a consequence of the driving being automated, and if driving - and it would only be happening if the driving were, in fact provably superior to what humans do – if the automated truck driver was not as good as a human driver, they wouldn't do it. So if all those were the case, then we talk as a society, is it is it justified to, replace those jobs? Now, there's a strong argument that it would be.

Now, the way to ethically do that is to think about what else can AI do? For example, why are truck drivers driving trucks? Well, they live in places that there aren't any other jobs. Physically, a lot of them live in rural countries, places where there's not enough jobs and it's the only job they can get and it pays well enough to make the bills, barely, OK. What if we were able to use, well, the things we all learned about during COVID, that you can work remotely on a lot more jobs than people thought? And why don't we use the AI abilities to help reskill people so that, for instance, a person who follows the example of a bus driver who you trust with the lives of your children, taking them to school, you ought to be able to trust them to show up to work and do home nursing skill, skilled nursing care rather, home nursing care. Well, they're not nurses. But if they had an AI assistant that was helping to sort of give them the medical part of that job, they can do the trust in the human condition, the human bedside manner part of the job, then these people could be reskilled. So this is really the way forward, I think, and we think about job migration or job transformation from high tech and in particular AI.

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BH: And then there are other side effects of, let's say trucks are driven by AI bots, whatever we're going to call them. There are lots of laws of the road because of humans driving vehicles. So, for example, the distance between lorries could come down to really short distances, make it more aerodynamic, more fuel efficient and so forth, but also speeds as well, presumably an AI bot would be able to handle much higher speeds than, let's say, a human driver. So you start getting lots of other side effects, don't you?

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TG: Yes. I mean, the self-driving vehicle argument is extremely strong when you fast forward to the future where the roads are dominated completely by self-driving cars. That's clearly a better world to live in. That's not a world we're going to live in anytime soon. So in the meantime, it turns out that the much harder AI problem is how to make AI that can get along with the terrible human drivers, tight. That's actually the challenge of automating driving right now, and so it's fine, that's the engineering challenge. That's why the billions of pounds and dollars are being spent on that. But it's also the case that you see where the key technical bottleneck is, again, about knowing humans and human psychology, rather than something about the physics of driving.

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BH: So, do you think that there will be a humanistic AI component where an assistant will be helping a human driver, before we can get to a kind of level five automation inside cars driving themselves?

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TG: Well, Bradley that's exactly the point. I think you really got there. If you take that edge case and you say, well, what's the humanistic AI angle on that? Well, I drive a car and I don't like to risk my life driving the car. I would rather have a driver, but I'm not a billionaire. I don't have my own driver. So wouldn't it be nice if I can have an AI driver? They're not good enough to replace drivers yet, but they certainly are good enough to augment me when I'm not a perfect driver. So essentially, if you look at the Tesla, what they call autopilot, really is sort of bonehead assistance. Like when you're being a dumb driver, like you're looking down or you're messing with your phone for some reason, or you're being distracted by something, a cognitive distraction. The AI is there as sort of a backup so that the temporary distraction is not dangerous because, of course, at a high speed or in a traffic situation, a half of a second can make a difference to having an accident and not, and so really, that's a great example of augmentation today, and as it gets better and better, it's moving more and more towards automation. But at that point, I still view that selfishly as a service to me, like I get my private driver finally, right, and if everyone had their own private driver or a driver they share with a bunch of people, then the world's a safer place.

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BH: Yeah, I'm sure there'll be some people that would disagree with that.

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TG: If you are a lorry driver today, you don't like that argument, of course. If you were a textile manufacturer 150 years ago in England, you didn't like the fact that steam engines were making your labour less productive. But I don't think the argument – they are the same argument, basically. It doesn't mean have no pity. It doesn't mean throw them out on the streets in some Dickinsonian world. It just means that that particular job category is probably better done with a machine than a muscle.

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BH: And how else do you think that AI is going to continue to revolutionize the way that we live and work in the near term future?

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TG: Yeah, really humanistic AI has sort of three ways that will profoundly change the way we live our day to day lives. The first is basically augmentation. I mentioned this word a few times, so like glasses, they're augmentations. I have less than perfect vision. I wear lenses, they augment me.

Now AI is a cognitive technology, a thinking technology, right. And so it augments me intellectually, mentally. So the case I showed in the TED talk was memory. It's a great low hanging fruit problem for cognitive enhancement. We all have memory issues and we all could use a little help and computers happen to be really good at it. So the only thing we needed to do to make that story come together is to have the sensors to perceive the things we want to remember, which we now have because we're wearing and carrying AI computers around all the time. Also the AI to make the interface fluid, which again we have because of intelligent interfaces like Siri and so on, and that ability to on the demand, just saying "what was that thing that I want" - try to remember, the context of knowing that my subset of the entire universe is much more searchable than the entire universe. So that's a case. I think we're going to have personal memory all over the place routinely and we won't even call it AI. It's just going to be, 'my phone told me this'. The only thing we have that's not solved today is attention management.

Today, the AI, the money, big money on attention management is being spent against humans right now. Today, it's being spent to - basically, unenhanced us cognitively, and that is, I'm talking about social media and their use of AI to optimise the addictive potential qualities of the feeds, the recommendation feeds and so on. The AI is extremely good, superhuman at addicting people to stay online. We can take that same technology and use it to help train people, to create critical thinking and attention management. Attention management is just another cognitive skill like memory, and it can be trained and augmented. So essentially I can say, "Well, you asked me to help you not get into that YouTube trance, and so here I am." Right. The third thing is learning. So we all learn all the time, sometimes in school and then for the rest of our lives not in school, and again, we're fairly inefficient at it as a species, and AI now can, by putting sensors looking at us, listening to us, watching what we do, can optimise our learning. So that's all under the umbrella of augmentation. That's going to be routine within a few years, because AI can do this. The next thing is overcoming our limitations as physical people.

So one of the projects I'm really excited about working with is a company called Cognition with an X, and what they do is they use AI to augment humans who have limitations in their ability to articulate speech like I'm doing now. They have neurological conditions, cerebral palsy, ALS that causes them to not be able to speak. It's a fundamental problem. It's a really bad disability to have, much worse than being blind, say, and we can use computers in particular AI now to make sense of data we couldn't make sense of in the past to help make sense of the small amount of gestural input they can provide to computers to be able to generate fluid speech. So I also think that essentially AI will be an equaliser across folks of different physical abilities, even to some extent cognitive abilities. And finally, I mean, we're going to see AI is coupled into this whole quantified self-awareness movement that's happening right now.

A lot of people in health care and wellness are seeing that the data and the computer interpretation of data can radically change how we take care of ourselves. And so AIs, especially agent ones with goals and partnership kind of relationships with you, are going to be your buddy, going to be your coach, your partner, your nurturing coach that would teach you and help you reach your goals for wellness and for health. I mean, most of the expense of health care in the Western democracies of the world, almost all of it is caused by chronic disease, which is caused by human behaviour. And so AI can - if AI can addict two billion people to social media, maybe it can addict two billion people to a healthier life and therefore a longer life.

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BH: Are you suggesting that while at work from home, every time I go into the kitchen to get another candy bar, my Google Home is going to say, "Bradley, I don't think you want to do that"?

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TG: There's all kinds of wonderful design options, yeah. I saw a Dark Mirror episode in which the dishwasher annoyingly told them, you know, something about the dishes and the food that they're eating. It was great, it was just like, such an example of like how badly you could design this if you want to do.

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BH: All I need is someone to invent a dishwasher that when my kids walk past it, it says, "Empty me, don't wait for dad". But there we go, on that note Tom -

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TG: Your kids are gonna go, "Empty yourself, droid".

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BH: Yeah, exactly, yeah. On that note, Tom, thanks so much for joining us on Tech Reimagined. It's been fascinating talking to you. To all of our listeners and our viewers now, I hope you've enjoyed this episode of Tech Reimagined with Tom Gruber, and thanks very much for joining us today. If you like today's topic, please show us some love and hit that like button. Don't forget to subscribe on whatever podcast or webcast platform you're watching this on the moment, and if you've got any further questions or you want to reach out and contact us, please go to [endava.com](http://endava.com) and click on the contact button. I think it's on the right hand side. I'm Bradley Howard and this is Tech Reimagined. Until next time.